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March 10, 1999

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

RE: Docket #94-102

Dear Ms. Salas:

On Monday, March 8, 1999, the attached item was communicated to the following people on the Commission:

Honorable William E. Kennard, Chairman
Commissioner Harold W. Furchtgott-Roth
Commissioner Susan Ness
Commissioner Michael K. Powell
Commissioner Gloria Tristani
Mr. Thomas Sugrue

Respectfully submitted,

Jack Allison

E. Jackson Allison, MD/MPH FACEP

Enclosure

Enhancing Patient Care Through Wireless Location Technology: The Emergency Medicine Perspective

E. Jackson Allison Jr., MD/MPH FACEP
Past President, American College of Emergency Physicians

March 3, 1999

Introduction:

Wireless communications have been both a boon to, and the bane of, emergency medical services (EMS). Emergency medical personnel are now notified of many emergencies far sooner than a decade ago—but we often cannot find these victims quickly because, unlike wired phones, we do not automatically know the caller's location.

EMS needs wireless location technology so patients can receive more timely care. In emergency situations, time is a major factor in determining patient outcome: the quicker the patient receives appropriate care, the less likely the patient will suffer needlessly and the more likely he or she will survive.

How has the federal government been involved in assuring that EMS systems will be able to locate emergency patients more rapidly? The good news is that in 1996 the Federal Communications Commission (FCC) mandated a two-phase plan for carriers to provide location information to Public Safety Answering Points (PSAPs).[1] The plan is to be implemented no later than October, 2001. Even better news is that in December, 1997 the FCC reaffirmed its deadlines.

The bad news is that recently the FCC staff announced it will consider delaying implementation. The staff offered to waive the 1996 rule for one or all carriers by permitting the location requirement to apply only to *new* wireless phones sold after October, 2001.[2] From the emergency medicine perspective, the latter would have potentially devastating consequences for a significant number of the nearly 100 million wireless subscribers in the year 2001 who will not be located automatically when they dial 9-1-1. And, as most 9-1-1 calls are about someone else's emergency, not the caller, the impact of delay will be felt by the broad public; it will not be limited to wireless subscribers.

This vital public health issue needs to be handled with the greatest of care by everyone involved—government, industry, health care personnel, the public—in order to provide optimal emergency services to our citizens nationally.

Medical Background:

EMS systems rely on advanced public emergency response services, known as Basic 9-1-1 and Enhanced 9-1-1 (E9-1-1) services, to reach patients who are experiencing a medical emergency. Basic 9-1-1 allows the public within a certain area to access the local EMS system for ambulance dispatch using the special telephone number 9-1-1. Enhanced 9-1-1 identifies the location of

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[1] Federal Communications Commission, *FCC Report and Order Docket No. 94-102*, 1996.

[2] Ibid. p.2.

emergency callers via information technology and telecommunications equipment. E9-1-1 reduces EMS response times, and therefore morbidity and mortality.

Major trauma is one of many emergencies suffered by Americans. In 1997 nearly 42,000 people died in motor vehicle crashes.[3] It has been estimated that by reducing the *crash notification time*, e.g., the time from the crash or onset of the emergency until EMS has been notified, thousands of lives could be saved annually.

Presently motor vehicle crash detection in rural areas is by patrol vehicles, passing motorists or pedestrians. Rural crash notification times are significantly greater than in urban areas (9.6 minutes versus 5.2 minutes on average). Unfortunately rural fatalities make up 58 percent of all crash-related deaths although rural vehicle miles traveled (VMT) are only 42 percent of total VMT.[4]

Locating crash victims rapidly, especially in rural areas, is still a major problem in this country. With wireless location alone, part of this problem is solved; with wireless location implementation, an additional promising application -- automatic crash notification (ACN) -- can be deployed more rapidly and much more inexpensively. ACN is a device (either original equipment or retrofit) which collects impact data, including initial velocity, delta velocity, and major direction of impact force. These data points, as well as the make of the car, would automatically be communicated via impact activation of a cellular phone call, and the exact location would also be computed and transmitted simultaneously.[5] Thus, EMS would receive the key information: the crash and its location would be known immediately, along with the information necessary to send the appropriate care to the correct location. Again the goal is to improve the outcome of injured patients by reducing time to treatment—yet with ACN, so much more can be accomplished.

Other examples of emergencies where wireless location can be critical include acute heart attacks, strokes, and episodes of dangerously low blood sugar (hypoglycemia). Comparable data for chest pain include four million hospital admissions annually; for stroke, 600,000 incidents; and for hypoglycemic coma, literally millions of cases. In order to preserve functioning hearts and minds, time is a proverbial two-edged sword: decreased time to treatment for all major emergencies saves lives and reduces suffering significantly. Again, wireless location technology provides the capacity to save precious time by allowing appropriate emergency care to be delivered more rapidly in the field, in the emergency department, in the trauma center, in the operating theater, and in the intensive care unit.

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[3] Insurance Institute for Highway Safety, *1997 Fatality Facts: STATE BY STATE*, http://www.highwaysafety.org/facts/stbyst.htm.

[4] Evanco, WM, *Reducing Accident Fatalities with Rural Mayday Systems*, Mitretek Systems Corporation, McLean, VA, April, 1996, p. 1-1.

[5] Martinez, R, and Michael, JP, *Taking the Search Out of Search & Rescue*, ITS Quarterly, Fall 1998-Winter 1999 Issue, p. 7.

Telephone/Wireless Background:

Basic 9-1-1 services have aided EMS systems in locating emergency patients. Enhanced 9-1-1 services on wired phones have been a manifold improvement over Basic 9-1-1 in that regard. By creating databases which connect a caller's number to his or her address, E9-1-1 automatically shows the location. E9-1-1 on wired telephones has now been extended to the vast majority of the population, even in rural areas.

Wireless telephones pose special problems in accessing both Basic 9-1-1 and E9-1-1 services. First, "9-1-1" is often not the emergency number. Second, as opposed to wired, land-based telephones, cellular/wireless telephones are presently unable to be located automatically. This is a particular problem for "roamers," wireless users who have traveled outside their usual locale, and who are thus less likely to know their location. They account for 10-25 percent of wireless emergency calls in a market which is expanding exponentially.

Today there are nearly 70,000,000 wireless subscribers in America; concomitantly, the volume of wireless emergency calls to 9-1-1 is increasing. During 1997, more than 30.5 million wireless 9-1-1 calls were made, averaging over 83,000 per day. These rose to 35 million and 98,000 per day in 1998.[6] Under current growth rates, we can expect 150,000 such calls daily by the end of 2001. The National Highway Traffic Safety Administration (NHTSA) has projected that within the next few years wireless 9-1-1 calls will equal the number of wireline 9-1-1 calls. That's where the FCC fits in.

Specifics of the FCC Mandate:

The two-tier plan mentioned above was promulgated in June, 1996 by the FCC. Phase I, to have been implemented by April, 1998, requires call-back number and cell site sector information about each incoming wireless 9-1-1 call. Phase II must be implemented by October, 2001; it requires carriers to provide Public Safety Answering Points (PSAPs) with Automatic Location Identification (ALI) for each wireless 9-1-1 call. Specifically, the wireless location technology will be required to provide an accuracy radius of 410 feet (125 meters) or better, root-mean-square (RMS). Medically, the timely deployment of Phase II will significantly reduce morbidity and mortality.

What will be accomplished by Phase I of the FCC mandate? It will provide dispatchers with the ability to narrow a wireless caller's location to an average radius of 3-10 miles, or an average area of roughly 9-100 square miles. Phase I implementation will still have limitations: because location information will be imprecise, dispatchers and EMS response teams will be forced to utilize valuable resources in locating and responding to wireless 9-1-1 calls. Phase II will address these

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[6] Cellular Telecommunications Industry Association, *Wireless Industry Is Model of Competition in Telecommunications*, February 8, 1999.

limitations.

What Phase II implementation will provide is far more precise location identification; this will allow emergency dispatchers the ability to narrow a wireless caller's location to within an area of 0.05 square miles (or 410 feet or less as noted above). Therefore, Phase II will enable immediate response to emergencies in the community, urban and rural, because automatic location data will be displayed within seconds on the dispatcher's computer mapping terminal.

Anyone in EMS knows the benefits of E9-1-1 on the wired telephone side in reducing mortality and morbidity.[7] Achieving emergency location with wireless 9-1-1 will produce similar benefits. Furthermore, external wireless location will allow the rapid and inexpensive implementation of ACN retrofit and original equipment devices because the cost of adding a Global Positioning System (GPS) unit to cars will be eliminated.

Changing E9-1-1 Rules Will Cost Lives:

Since several location technologies are already available from several vendors which could be deployed universally by 2001, the FCC should not delay implementation of its original mandate. Major emphasis should be on decreasing EMS response times, and therefore saving lives. What is best for public safety should be the guiding principle, not a medically meaningless phrase dubbed "technologically neutral."

The FCC staff recently proposed to delay the current FCC requirement, shift it from wireless carriers to wireless manufacturers, and apply it only to new wireless telephones—at the carriers' option. The FCC staff is apparently operating on the assumption that GPS technology can be easily incorporated into new wireless hand telephones and therefore deliver more accuracy. The staff has proposed that carriers which sell such GPS-enabled wireless telephones after an unspecified future date be allowed to escape the current requirement of universal location coverage by 2001.[8] This would require consumers to buy a new, more expensive wireless phone in order to be locatable. A review of the filings in this matter shows that no carrier asserts that a commercial GPS solution for hand phones has yet been invented.

Effective delay of the current 2001 rule by the adoption of a GPS-based handset "waiver" would have significant negative public health effects. It would leave tens of millions of current wireless phones in use without emergency location capabilities, and would cost many lives in the interim.

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[7] Athey, S, and Stern, S, Working Paper 6595: *The Adoption and Impact of Advanced Emergency Response Services*, National Bureau of Economic Research, Inc., Cambridge, MA, 1998.

[8] See sampling of FCC Filings of February 4, 1999.

This public safety issue must be clearly decided on public safety grounds. Since we must be able to locate wireless callers in emergencies, and we now know that the FCC mandate can be realized by October, 2001, the FCC should *not* entertain any proposal which would only apply wireless location rules to new handsets.

Inexplicably, "technological neutrality" has somehow become the watchword for the FCC staff, rather than public safety. The initial FCC rule was entirely neutral technologically; it did not mandate a specific technological solution.

If the FCC desires to change the E9-1-1 rule, it should engage in a rigorous cost-benefit analysis. The current staff Notice and responses to it fall far short of that. The current rule is a technologically neutral performance standard requiring universal handset location coverage within 410 feet by October, 2001. The Notice implicitly changes the performance standard to "less than 410 feet, and only cover new handsets at some point in the future." Such a fundamental change requires a significant public safety justification. The FCC analysis should be founded on the first premise of medicine: Do No Harm. Indeed, the FCC should not and must not do anything to endanger public safety. Can a serious safety cost-benefit analysis justify changing the current rule?

On the benefit side, the only issue suggested is the potential of increased accuracy of location. Certainly, all else being equal, more accuracy is to be desired. But no carrier requesting a waiver offered more than a 100-foot improvement in the rule: 90 meters v. 125 meters; and none offered any data on the lives that would be saved and significant injuries reduced by a 100-foot closer location. No such data exist.

Conversely, the costs of delay will be very high: significant societal costs related to searching for victims, not being able to find victims, and those dealing with increased injury and death. If the FCC delays the rule to wait for GPS-enabled handsets to be marketed, all or some large percentage of about 150,000 emergency calls a day will not be automatically located on the October, 2001, date when all such calls were to be located.

The FCC cannot tout the life saving benefits of wireless E9-1-1, yet ignore them when it considers wholesale delay in achieving those benefits.

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Dr. Allison is an academic emergency physician with over 20 years' experience in emergency medicine. He is Sterling Distinguished Professor & Chair Emeritus, Department of Emergency Medicine, East Carolina University School of Medicine. He also is Past President of the American College of Emergency Medicine (ACEP); former Chair of the Residency Review Committee for Emergency Medicine; Past Chairman of the Board of Trustees of the Emergency Medicine Foundation; and was one of four Founding Presidents of the International Federation for Emergency Medicine. Dr. Allison is a Fellow of both the American College of Emergency Physicians and the American College of Preventive Medicine. He presently serves on ACEP's Trauma Care & Injury Control Committee.